REMARKS

Claim 1 is amended in this response to more particularly define Applicant's invention. Claim 2 is canceled. No new matter has been added. Support for amended claim 1 is found in the specification, for example, at paragraphs 0075, 0234-0236, and by originally filed claims 1 and 2.

Upon entry of the amendment, claims 1 and 3-5 will be pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

Rejection Under 35 U.S.C. § 101

Claims 1-5 stand rejected under 35 U.S.C. § 101 for not reciting a concrete, tangible and useful result. Reconsideration of the rejection in view of the amendments to claim 1 is requested. In particular, Applicant has amended the claim to clarify that the method is for use in a computer system and to further include a step f) of "transmitting the located translation initiation condons to a user of the computer system." As such, it is respectfully submitted that amended claim 1 recites a concrete, tangible and useful result such that the rejection under 35 U.S.C. § 101 is overcome. Reconsideration and withdrawal of the rejection is requested.

Rejection Under 35 U.S.C. § 112, first paragraph

Claims 1-5 stand rejected under 35 U.S.C. § 112, first paragraph, because the specification does not reasonably provide enablement for finding initiation condons in a

nucleotide sequence as broadly claimed. It is respectfully submitted that this rejection is obviated by the amendments to claim 1.

Applicant has amended step c) of claim 1 to require using Bayes Network construction to generate the quadratic discriminant function. As acknowledged by the Examiner at page 4 of the Office action, Applicant has provided sufficient description for one skilled in the art to use Bayes Network construction in Quadratic Discriminant Analysis to find initiation condons in a nucleotide sequence. Accordingly, it is respectfully submitted that the instant specification provides sufficient description for one skilled in the art to practice the invention defined in amended claim 1. Accordingly, it is respectfully submitted that claims 1-5 are patentable under 35 U.S.C. § 112, first paragraph. Reconsideration and withdrawal of the rejection is requested.

Rejection Under 35 U.S.C. § 112, second paragraph

Claims 1-5 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed. In particular, Applicant has amended claim 1 to overcome the rejections. For example, step c) of claim 1 has been amended to require the use of Bayes Network construction for generating the quadratic discriminant function. Accordingly, it is respectfully submitted that amended claim 1 and claims 3-5, which depend from claim 1, are patentable under 35 U.S.C. §112, second paragraph. Reconsideration and withdrawal of the rejection is requested.

Rejection Under 35 U.S.C. §103(a)

Claims 1-5 are rejected under 35 U.S.C. 103(a) as obvious over Salamov et al. (Bioinformatics, 1998, Vol. 1, No. 5, p. 384-390) in view of Zhang et al. (Proc. Natl. Acad. Sci., 1997, Vol. 94, p.565-568). Reconsideration of the rejection in view of the amendments to claim 1 is requested.

The present invention is directed to a method of finding translation initiation codons in a nucleotide sequence. The method of the present invention is advantageous in that it is capable of compensating for frameshift-inducing sequencing errors in predicting translation initiation codons. As defined in amended claim 1, the method comprises a) analyzing a first data set to measure a combination of at least two of the features of initiator codons and pseudoinitiator codons provided in Table 1 to produce scoring function parameters for said combination of features; b) reading a sequence in the vicinity of an ATG triplet and using one or more scoring functions and one or more of the scoring function parameters to determine a numerical score that quantifies how much said ATG triplet resembles an initiator codon; c) generating a quadratic discriminant function by selecting a combination of feature variables that optimally classify ATG triplets in a nucleotide sequence as initiator codons or as pseudoinitiator codons based on the numerical score determined in step b) and using Bayes Network construction;

d) analyzing a second data set of nucleotide sequences using said quadratic discriminant function, wherein said analysis comprises evaluating at least one scoring function for each ATG triplet in said sequences to calculate the probability whether each ATG triplet is an initiator codon; e) locating translation initiation codons in said second data set based

on the probability calculated in step d); and f) transmitting the located translation

initiation condons to a user of the computer system.

Salamov et al. describe an attempt at using linear discriminant analysis to predict

whether the protein coding region of a sequence was complete by estimating the

probablility of each ATG being the initiation codon. Zhang et al. describe a method for

predicting internal coding exons using quadratic discriminant analysis. However, nothing

in the cited references describes the generation of a quadratic discriminant function using

a combination of feature variables and Bayes Network construction as required by

amended claim 1. Thus, it is respectfully submitted that one skilled in the art could not

combine the cited references to arrive at the method defined by amended claim 1.

Accordingly, Applicant submits that amended claim 1 is patentable under 35 U.S.C.

103(a) over Salamov et al. in view of Zhang et al. Reconsideration and withdrawal of the

rejection in view of the amendments is respectfully requested.

Conclusion

It is believed that all of the stated grounds of rejection have been properly

traversed, accommodated, or rendered moot. Applicant therefore respectfully requests

that the Examiner reconsider and withdraw all presently outstanding rejections. It is

believed that a full and complete response has been made to the outstanding Office

Action and the present application is in condition for allowance. Thus, prompt and

favorable consideration of this amendment is respectfully requested. If the Examiner

believes that personal communication will expedite prosecution of this application, the

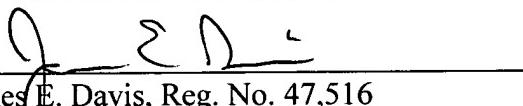Examiner is invited to telephone the undersigned at (314) 694-2393.

Respectfully submitted,

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CERTIFICATE OF MAILING UNDER 37 CFR 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service on December 21, 2007, with sufficient postage as first class mail (including Express Mail per MPEP § 512), and addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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